

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Rule 53(b) Divisional Application of:

Kohshi YOSHIMURA et al.

Divisional of S.N. 09/512,655 filed February 24, 2000

Group Art Unit: To Be Assigned

Filed: Herewith

Examiner: To Be Assigned

**For: PROCESS FOR SURFACE TREATMENT OF HOLLOW WORK HAVING HOLE
COMMUNICATING WITH OUTSIDE AND RING-SHAPED BONDED MAGNET
PRODUCED BY THE PROCESS**

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

January 3, 2002

Sir:

Prior to continued examination on the merits, please amend the above-identified application
as follows:

IN THE SPECIFICATION:

Please amend the specification as follows:

**Please replace the paragraph beginning at page 14, line 19 with the following rewritten
paragraph:**

This is a process which comprises sintering a required R-Fe-B based alloy and pulverizing
the sintered product again to produce a magnetic powder. For example, a starting material is a
powder which comprises ferroboration alloy containing electrolytically produced iron, boron, the

balance of Fe and impurities of Al, Si, C or the like, a rare earth metal, or further containing electrolytically produced cobalt. The starting powder is alloyed by a high frequency dissolution or the like in an inert gas atmosphere, coarsely pulverized using a stamp mill or the like and further finely pulverized by a ball mill or the like. The produced fine powder is subjected to a pressure molding in the presence or absence of a magnetic field, and the molded product is sintered in vacuum or in an inert gas atmosphere which is a non-oxidizing atmosphere. The sintered product is pulverized again to produce a fine powder having an average particle size in a range of 0.3 μm to 100 μm . Thereafter, the fine powder may be subjected to a heat treatment at a temperature in a range of 500°C to 1,000°C in order to increase the coercive force.

Please replace the paragraph beginning at page 36, line 6 with the following rewritten paragraph:

In the observation of the behavior of the contents of the vessel, the magnet 23 was rotated at a low rotational speed in the direction of rotation of the vessel 21, as shown in Fig.6. The media 24 outside the magnet were brought into flowing contact with the outer surface of the magnet in the direction of rotation of the vessel to such an extent that they did not wrap the magnet. The media within the through-hole in the magnet were brought into flowing contact with the inner surface of the magnet in the through-hole in the direction of rotation of the vessel. The magnet could not be moved violently within the vessel due to the presence of the pipe of copper 25, so that the behavior thereof was tranquillized.

Please replace the paragraph beginning at page 40, line 26 with the following rewritten paragraph:

When the rotational speed was of 200 rpm, the media 24 had a good flowability within the through-hole in the magnet 23, as shown in Fig.14, and the adhesion of the fine Cu powder to the inner surface of the magnet was observed, as shown in Fig.15.

IN THE CLAIMS:

Please cancel claim 1-10 without prejudice or disclaimer.

Please amend claim 11 as follows:

11. (Amended) A ring-shaped bonded magnet having a film layer made of a fine metal powder on the entire surface thereof, which is produced by a surface treating process comprising the steps of placing the work and a fine metal powder producing material into a treating vessel, thereby adhering a fine metal powder produced from said fine metal powder producing material to the surface of said work.

REMARKS

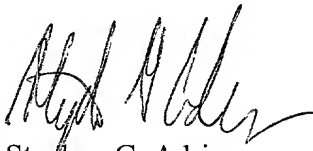
Claims 11-13 are pending. The specification and claim 11 are amended hereby. A marked-up version showing the changes to the specification and claim 11 made by the present amendment is attached hereto as **"Version with markings to show changes made."**

Prompt and favorable action is earnestly solicited.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP



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SGA/arf

Attachment: Version with markings to show changes made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

DIVISIONAL OF 09/512,655

IN THE SPECIFICATION:

The specification have been amended as follows:

Paragraph beginning at page 14, line 19 has been amended as follows:

This is a process which comprises sintering a required R-Fe-B based alloy and pulverizing the sintered product again to produce a magnetic powder. For example, a starting material is a powder which comprises ferroboration alloy containing electrolytically produced iron, boron, the balance of Fe and impurities of Al, Si, C or the like, a rare earth metal, or further containing electrolytically produced cobalt. The starting powder is alloyed by a high frequency dissolution or the like in an inert gas atmosphere, a coarsely pulverized using a stamp mill or the like and further finely pulverized by a ball mill or the like. The produced fine powder is subjected to a pressure molding in the presence or absence of a magnetic field, and the molded product is sintered in vacuum or in an inert gas atmosphere which is a non-oxidizing atmosphere. The sintered product is pulverized again to produce a fine powder having an average particle size in a range of 0.3 μm to 100 μm . Thereafter, the fine powder may be subjected to a heat treatment at a temperature in a range of 500°C to 1,000°C in order to increase the coercive force.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

DIVISIONAL OF 09/512,655

Paragraph beginning at page 36, line 6 has been amended as follows:

In the observation of the behavior of the contents of the vessel, the magnet 23 was rotated at a low rotational speed in the direction of rotation of the vessel 21, as shown in Fig.6. The media 24 outside the magnet were brought into flowing contact with the outer surface of the magnet in the direction of rotation of the vessel to such an extent that they did not wrap the magnet. The media within the through-hole in the magnet were brought into flowing contact with the inner surface of the magnet in the through-hole in the direction of rotation of the vessel. The magnet could not be moved violently within the vessel due to the presence of the pipe of ~~cupper~~ copper 25, so that the behavior thereof was tranquillized.

Paragraph beginning at page 40, line 26 has been amended as follows:

When the rotational speed was of 200 rpm, the ~~medial~~ media 24 had a good flowability within the through-hole in the magnet 23, as shown in Fig.14, and the adhesion of the fine Cu powder to the inner surface of the magnet was observed, as shown in Fig.15.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

DIVISIONAL OF 09/512,655

IN THE CLAIMS:

Claim 11 has been amended as follows:

11. (Amended) A ring-shaped bonded magnet having a film layer made of a fine metal powder on the entire surface thereof, which is produced by a surface treating process [according to claim 1] comprising the steps of placing the work and a fine metal powder producing material into a treating vessel, thereby adhering a fine metal powder produced from said fine metal powder producing material to the surface of said work.